

REMARKS

The applicant appreciates the withdrawal of the previous grounds for rejection. Claims 21-25, 27-36 and 41 are newly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 4,804,905 (hereinafter "Ding") in view of U.S. Patent 5,514,482 (hereinafter "Strangman") and further in view of US patent no. 5,552,711 (hereinafter "Deegan"). An additional secondary reference is applied to reject further claims. Reconsideration of the rejections and allowance of all pending claims is requested in view of the following remarks.

Claims 1-20 and 26 were previously cancelled. Claims 21-25 and 27-41 are pending.

M.P.E.P. 2143.03 provides that to establish *prima facie* obviousness of a claimed invention, all the claims limitations must be taught or suggested by the prior art. All words in a claim must be considered for judging the patentability of the claim against the prior art. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending there from is nonobvious.

Independent claims 21 and 41 are each directed to a turbo engine. Each of these claims in part respectively recites a measuring element operating in a kilohertz frequency range for measuring an electric or magnetic field strength set up by a charge distribution on the electrically insulating surface of the rotor blades or guide vanes and for generating a signal indicative of the electric or magnetic field strength. The strength of the electric or magnetic field is indicative of a level of wear or a defect that can arise in the electrically insulating surface.

The Office Communication correctly acknowledges that the combination of Ding and Strangman fails to teach or suggest a turbo engine that includes a measuring element operating in a kilohertz frequency range for measuring an electric or magnetic field strength set up by a charge distribution on the electrically insulating surface of the rotor blades or guide vanes. Moreover, such a combination fails to teach or suggest that the strength of the electric or magnetic field obtained by the measuring element is indicative of a level of wear or a defect that can arise in the electrically insulating surface. The Examiner applies Deegan to purportedly correct the deficiencies of Ding and Strangman. However, as discussed in greater detail below, the combination of Ding, Strangman and Deegan fails to constitute a *prima facie* combination of references for sustaining a Section 103 rejection. Consequently, this basis of rejection should be withdrawn.

Applicant traverses the combination of Ding, Strangman and Deegan on two alternative basis. Firstly, Deegan expressly describes ions resulting from hydrocarbon fuels and from metals. See Deegan col. 2, lines 51-56. Consequently, Deegan fails to remedy the deficiency of Ding and Strangman regarding a measuring element for measuring an electric or magnetic field strength set up by a charge distribution on the electrically insulating surface of the rotor blades or guide vanes. One skilled in the art will appreciate that neither 1) ions from a hydrocarbon fuel, nor 2) ions from metals meets the foregoing structural and/or operational relationships of the claimed invention. That is, nowhere Deegan describes ions from an electrically insulating surface of the rotor blades. Moreover, Deegan expressly describes at col. 1, lines 52-54 that the radio receiver of his invention is tuned to the extremely low frequencies of such emissions. Each of the frequencies listed in Table 1 of Deegan is below 100 Hz. Accordingly, one skilled in the art would further appreciate that Deegan, if anything, teaches away from a measuring element operating in a kilohertz frequency range, as set forth in the claimed invention.

Secondly, MPEP 2143.01(VI) states that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Ding expressly describes at col. 4, lines 32-40 that the maximum charge $Q_{i\max}$ for each blade passage varies with the capacitance of the gap capacitor C_{si} and thus with the distance s of the individual blade 4 from the sensor in accordance with the equation below:

$$Q_{i\max} = C_{si} \times U_{ref} \times f(s)$$

where $f(s)$ represents the relationship between gap and capacitance as determined by calibration.

That is, one skilled in the art would appreciate that Ding's device is directed to measuring capacitance to determine a blade clearance. As expressly described by Deegan, ions are the means for this invention to operate. See Deegan lines 64-65. Consequently, combining Deegan (ion detection) with Ding and Strangman, as proposed in the Office Communication, would change the principle of operation of Ding (capacitance measurement). That is, one of ordinary skill in the art will appreciate that ionic detection (Deegan) is a different principle than

performing a capacitance measurement. The foregoing is yet another basis why the combination of Ding, Strangman and Deegan fails to constitute *a prima facie* combination of references for sustaining a Section 103 rejection of the claimed invention.

Accordingly, applicant asserts that claims 21 and 41 cannot be rendered obvious by the cited art. Furthermore, claims 22-25 and 27-31 either directly or indirectly depend from independent claim 21 and are therefore construed to contain each of the structural and/or operational relationships of claim 21. Thus, the cited art fails to render obvious these dependent claims. Applicant respectfully requests reconsideration and withdrawal of this 35 USC § 103(a) rejection.

Independent claim 32 is directed to a method for determining damage to an electrically insulating surface of a turbine component. Claim 32 in part recites creating an electric or magnetic field strength by a charge distribution on the electrically insulating surface of the turbine blade or vane. The electric or magnetic field strength is measured by a measuring element operating in a kilohertz frequency range. The strength of the electric or magnetic field is indicative of a level of wear or a defect that arises in the electrically insulating surface. In view of the discussion above, applicant asserts that based on the distinguishing structural and/or operational relationships respectively recited in claim 32, such a claim (and claims depending there from) cannot be rendered obvious by the cited art. Thus, for similar reasons, the cited art fails to render obvious these dependent claims. Applicant respectfully requests reconsideration and withdrawal of this 35 USC § 103(a) rejection.

Dependent claims 37-40 are rejected under 35 USC § 103(a) as being unpatentable over Ding, Strangman, Deegan and further in view of I.E.E.E. Interharmonic Task Force Publication titled “*Interharmonics in Power Systems*”. Applicant traverses and incorporates herein the remarks made in response to the rejection of independent claim 32. Claims 37-40 include additional distinguishing features and are construed to contain the structural and/or operational relationships of claim 32. In view of the discussion above that claim 32 is not unpatentable over the Ding, Strangman, Deegan references, claims 37-40 are also not unpatentable over such references. The I.E.E.E. Interharmonic Task Force Publication does not cure the deficiencies of the Ding, Strangman, Deegan references with respect to claim 32, and therefore further applying the I.E.E.E. Interharmonic Task Force Publication does not render obvious claims 37-40. Applicant respectfully requests reconsideration of this 35 USC § 103(a) rejection.

Conclusion

It is respectfully submitted that each of the claims pending in this application recites patentable subject matter and it is further submitted that such claims comply with all statutory requirements and thus each of such claims should be allowed.

The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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